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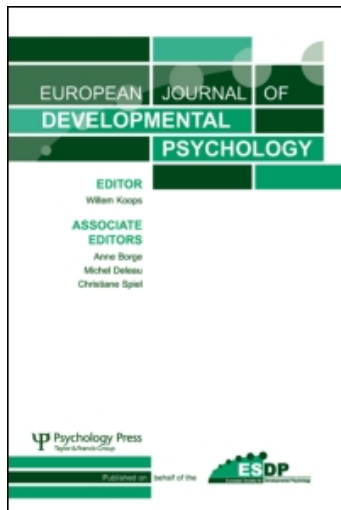
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Emotion understanding in children with frequent somatic complaints

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The assumption that an impaired ability to identify and express emotions (“alexithymia”) is related to a lack of physical well-being in children was investigated. Two groups of children (mean age 10 years), who differed in their reported frequency of somatic complaints, were asked to fill out a mood questionnaire and respond to emotion-evoking situations. The findings showed that the number of somatic complaints in children was unrelated to their ability to identify their own emotions when asked about hypothetical conflicting situations. Yet, both groups identified different emotions. Children with more somatic complaints reported more fear and fewer anger reactions. They also reported experiencing more negative emotion-evoking situations with peers.

Fear suggests a stronger tendency for withdrawal, whereas the anger reaction of the healthier group implies a stronger tendency to approach (negative) emotion evoking situations. Consequently, the conflicting situation continues for the first group, whereas the second group will be more likely to solve it. Strong or long-lasting arousal has a negative effect on bodily functioning: it can disturb biological subsystems and bring about organic changes. The possibility that fewer social skills, for expressing emotions in a socially constructive way, or fewer coping strategies in the group who reported more somatic complaints also influence the intensity and duration of negative emotions is discussed.

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INTRODUCTION

Medical doctors frequently encounter children who report somatic complaints. Between 8 and 14 years of age, approximately 30% of children report headaches, stomach-aches, fatigue or other physical complaints at least once a week (Garber, Walker, & Zeman, 1990; Tamminen, Bredenberg, Escarting, & Kaukonen, 1991). The most frequent pain complaints that medical doctors are presented with in children involve the gastrointestinal system (Bosch, 1995; Bosch & Slot, 1998). For example, recurrent abdominal pain can be found in 10% to 30% of children (Garber et al., 1990; Wilson Sharrer & Ryan-Wenger, 1991). Moreover, various physical complaints often occur simultaneously. For example, children with recurrent abdominal pain also frequently experience headaches (Alfven, 1993; Burke, Elliott, & Fleissner, 1999; Bury, 1987; Kellner, 1994; Perquin et al., 2000; Scharff, 1997). Many of these children seek medical help, even though an organic cause can only be located in less than 10% of them (Compas & Harding Thomsen, 1999; Edwards, Mullins, Johnson, & Bernardy, 1994; Raymer, Weininger, & Hamilton, 1984). Therefore, it seems important to investigate other possible causes of these complaints.

Several studies suggest that there is a relationship between somatic complaints and psychological factors in children. Emotional factors such as increased levels of stress, stronger negative affect, more symptoms of depression or feelings of fear often co-occur with an increase in somatic complaints (Apley, 1975; Beidel, Christ, & Long, 1991; Bonner & Finney, 1996; Garber et al., 1990; Hodges, Kline, Barbero, & Woodruff, 1985; Jolly, Wherry et al., 1994; McGrath, 1987; Raymer et al., 1984; Scharff, 1997; Walker, Garber, & Greene, 1991; Wilson Sharrer & Ryan-Wenger, 1991). Whether or not an organic cause for the physical complaints can be identified appears not to be influential (Kellner, 1994; Raymer et al., 1984; Scharff, 1997; Von Baeyer & Walker, 1999). Therefore, we based our research on children's self-reports of somatic complaints. The central question then becomes: to what extent does the emotional functioning of children add to their self-reported somatic problems.

The question of how physical complaints can be understood and explained by psychological functioning is not a recent one. The Roman orator Cicero discussed the harmful effect of excessive emotions on physical wellbeing in the first century before Christ (Taylor, 1999a). Western medical science, however, for a long time perceived malfunctioning of the body as the main reason for illnesses, whereas functioning of the mind was judged secondary or simply neglected (van der Feltz-Cornelis & van Dyck, 1997). Even symptoms that we today label as psychological, were in the seventeenth century seen as the result of physical problems. For example, "melancholy" (a combination of a depressed mood, fear and somatic

complaints) was thought to be caused by black bile (Burton, 1621, in Taylor, 1999a). Since the end of the eighteenth century, a Cartesian dualistic differentiation between somatic and psychological functioning has become more and more prominent, and a strict distinction is now made between physical and psychological functioning (van der Feltz-Cornelis & van Dyck, 1997).

Within this dualistic framework, various psychological theories have been developed to explain physical malfunctioning. Stekel (1911) introduced the concept “somatization”, which refers to the process by which neurotic conflicts are expressed through physical illnesses. The psychoanalytic approach embraced this view—(psycho)somatic complaints were seen as an utterance of suppressed, unconscious drive-related wishes. Currently, this dualistic Cartesian view is less rigid. In recent literature, somatization is seen as a way of communicating unrecognized psychological stress (Lipowski, 1988; Wickramasekera, 1989), thus moving towards a monistic approach. However, how this interaction between mind and body takes place exactly, remains unexplained. More precisely, it is still unclear how psychological functioning can cause physical illnesses. Van der Feltz-Cornelis and van Dyck (1997) refer to a “missing link” in this respect.

An attempt to understand this missing link can be found within the personality trait *alexithymia*. Sifneos (1973; 1996) argued that alexithymia is the most prominent characteristic of people with psychosomatic complaints. Alexithymia refers to a limited ability to identify and communicate one's own emotions (Bagby & Taylor, 1999; Paez, Basabe, Valdesola, & Iraurgi, 1995; Sifneos, 1973; 1996; Taylor, Bagby, & Parker, 1991). It is argued that every emotion consists of more or less notable physical reactions, such as sweating, a faster heart beat, and tension in the abdominal area. Frijda (1986) refers to these reactions as action tendencies—the body prepares itself for behaviour that is adaptive to a person's perception of that particular situation. For example, the body gets ready to run away (increased activity of the sympathetic nervous system and muscle tension) when the presence of another person is perceived as a threat to one's own wellbeing. When asked how they feel, non-alexithymic people will say that they feel scared. In other words, people usually process on a cognitive level what is perceived physically, but this is impaired in people who are alexithymic.

A distinction here is made between moods (global affective states without a cause, object or onset) and emotions (directly linked to a specific event or situation) (Frijda, 1991). The assumption is that people with alexithymia can roughly identify their own (mostly negative) mood, but they lack insight into why they feel that way. When they are exposed to specific emotion-evoking situations, they fail to denote these situations in emotional terms. Bodily change by itself is insufficient to identify an emotional state, because one needs a situational context to give a meaningful interpretation of the bodily

signals. Otherwise, one could easily interpret these signals as organic problems. For example, does an increased heartbeat and sweating point to stress or oncoming “flu”? If these signals are misinterpreted as organic problems, these people cannot analyse the situation in a way that helps them to deal with their emotions adaptively. They feel bad as a general mood state, but cannot link this negative mood to specific situations, memories or expectations (Bagby & Taylor, 1999). Consequently, signals of stress and the corresponding physical changes continue.

Alexithymia among adults is usually measured by a questionnaire, the TAS-20 (Bach, Bach, & De Zwaan, 1996; Cohen, Auld, & Brooker, 1994; Deary, Scott, & Wilson, 1997; Lumley, Ovies, Stettner, Wehmer, & Lakey, 1996; Parker, Bagby, & Taylor, 1989) and these authors indeed find an association between alexithymia and the amount or frequency of reported somatic complaints in non-clinical populations. The association between alexithymia and negative moods has also been established (Taylor, Bagby, Ryan, Parker, Doody, & Keefe, 1988; Deary et al., 1997; Lundh & Simonsson-Sarnecki, 2001). Research on the relationship between somatic complaints, mood detection and identification of emotions in children, however, is scarce. This study attempts to provide more information in this respect and two research questions were thus formulated.

The first question dealt with mood states and somatic complaints. The question concerned the extent to which reported somatic complaints in children are related to the perception of more negative moods and less positive ones. Among adults, self-report mood questionnaires usually contain basic emotions (such as anger, fear and sadness), but also more sophisticated moods are included, such as vigour or tension. The latter are not yet embedded within the emotion vocabulary of elementary school-children. Therefore, we designed a questionnaire suitable for our age group that contained basic emotions only. Based on a somatic complaint index, two groups were identified: (1) a group who reported the most somatic complaints; and (2) a group who reported the least. In this study, these two groups were compared. In line with the alexithymia hypothesis, it was expected that children who reported more somatic complaints would experience negative moods more often than the group who reported fewer somatic complaints.

The second question dealt with situation-specific emotions and somatic complaints. The question concerned the extent to which reported somatic complaints are related to children's ability to identify their own emotions (alexithymia). Since it was difficult to design an alexithymia questionnaire for children, we presented children with hypothetical stories containing emotion-evoking social situations and asked them how they would feel in those kind of situations. In line with the alexithymia hypothesis, it was expected that children who reported many somatic complaints would be less

able to acknowledge their own emotions in specific situations when compared to children who reported fewer somatic complaints. Consequently, children who reported fewer somatic complaints would identify more emotions if they were asked to think about emotion-evoking social situations than the group who reported more somatic complaints.

An alternative explanation for such a finding could be that the group that reported fewer somatic complaints would consist of children who were strongly emotionally expressive. Possibly, it might even concern a group of children that would express themselves too assertively, or even aggressively. In order to gain information about the extent to which children from both groups indeed differed in their socially adequate behaviours, we asked their teachers to judge this by means of a short behavioural questionnaire.

METHOD

Participants

In this study, 282 children participated (mean age 10 years and 5 months; range 8 years and 3 months to 12 years and 10 months). Participants were drawn from primary schools in the suburbs around Leiden, in the Netherlands. Half of the participants in this group were male and half were female and they came from middle-class families. From this total group, two groups of 26 children were selected for additional testing that took place two weeks later (see Procedure). The mean age for both selected groups was 10 years and 2 months (range 8 years and 5 months to 12 years and 4 months), and the group consisted of 28 male and 24 female participants. This was equally divided over both selected groups.

Procedure

The group of 282 participants were handed out two questionnaires in class: (1) a somatic complaint list (SCL); and (2) a mood questionnaire. Based on the SCL scores, we selected 52 children: 26 children who reported no or almost no somatic complaints (SCL score ≤ 1 , mean score of this group = 0.27); and 26 children with the highest SCL scores (SCL score ≥ 8 , mean score of this group = 11.12). We will refer to these groups as the "low-SCL" and the "high-SCL" groups respectively. Approximately two weeks later, these 52 selected children were tested individually by the same experimenter in a separate, quiet room, in a session of roughly 15 minutes. This time, the experimenter presented children with 16 emotion-evoking vignettes in random order. Children's responses were tape-recorded. Transcripts of children's responses were used to score their answers.

Materials

Somatic complaint list. Children filled out a Somatic Complaints List that was especially designed for this study (see Figure 1). A team of schoolteachers was consulted to include the most common complaints among children. The complaint list consisted of 8 items. Adult complaints lists are usually longer (for example 12 items, Parker et al., 1989), but many complaints that apply to adults are not yet experienced by children. Children were asked to score each item on a Likert-type scale (0 = never, 1 = sometimes, 2 = often). An example of an item is: "I have never/sometimes/often a stomach-ache".

Participants obtained a score of 0 when they responded "never" on all items, and they obtained a maximum score of 16 when they responded "often" on all items (this scoring was reversed for items 3 and 6, which were formulated positively). The internal consistency is good ($\alpha > .70$). The item homogeneity is low (.29), but this is not surprising, because it is not expected that children who respond positively to a few somatic complaints, will score positively on all items in the SCL.

Mood questionnaire. Children filled out a Mood Questionnaire that was also especially designed for this study. The questionnaire consisted of 4 mood scales (anger, happiness, sadness and fear), each consisting of 4 items. Thus, the total list consisted of 16 items. Children were asked "How did you feel lately?" as an introduction for these 16 items. Children were asked to score each item on a Likert-type scale (0 = never, 1 = sometimes, 2 = often). An example of an item is: "I never/sometimes/often feel angry". The internal consistency for each mood-scale is good ($\alpha > .70$) and the item homogeneity is high ($> .45$).

Emotion-evoking vignettes. The "Emotion Identification" material consisted of 16 stories (each with a drawing to illustrate the situation, see Figure 2 for an example), which described emotion-eliciting situations. Four stories were designed for each of the four emotions (happiness, fear, anger and sadness). After hearing each story, participants were asked: "How would you feel?" (Question 1). However, the same situation can evoke different emotions in different people, and whereas one person reacts with anger, someone else might become sad in the same situation (Stein & Trabasso, 1989). Therefore, children's emotion responses were not judged as appropriate or not, but it was simply counted how many times children named an emotion in one of the specified categories: angry, sad, happy or scared.

If participants reported more than one emotion, for example "I would feel sad and angry" the experimenter asked which was the stronger of the two emotions. In both groups, this happened on less than 4% of trials.

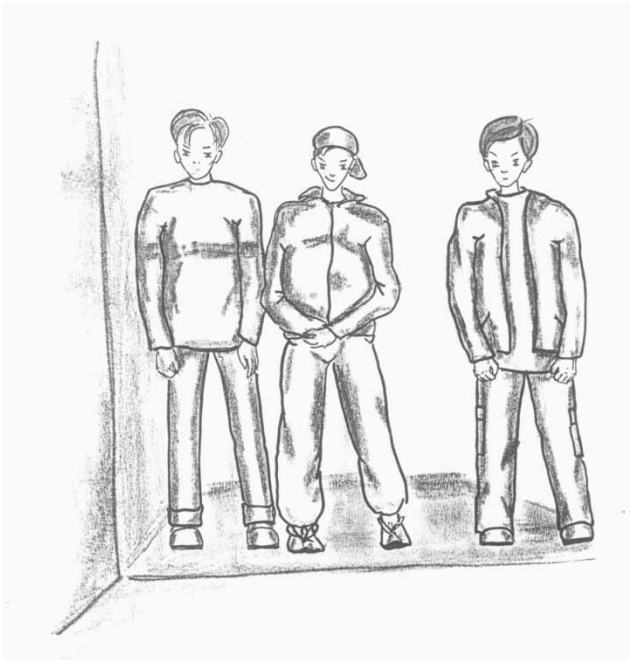
| | | | | | |
|----|---|--------------------------|--------------------------|--------------------------|--------------------------------|
| | | never | sometimes | often | |
| 1. | I | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | am tired |
| | | never | sometimes | often | |
| 2. | I | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | have a stomach ache |
| | | never | sometimes | often | |
| 3. | I | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | feel fine |
| | | never | sometimes | often | |
| 4. | I | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | feel pain somewhere in my body |
| | | never | sometimes | often | |
| 5. | I | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | weak |
| | | never | sometimes | often | |
| 6. | I | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | well |
| | | never | sometimes | often | |
| 7. | I | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | a head ache |
| | | never | sometimes | often | |
| 8. | I | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sick |

Figure 1. Eight items that comprise the Somatic Complaint List (SCL)

If participants gave an ambiguous answer, for example “I would feel bad”, which could not be categorized under happiness, anger, sadness or fear, the experimenter asked a follow-up question: “What do you mean, can you tell me more about it?” Follow-up questions were asked equally often for both groups (on less than 5% of trials).

If participants failed to identify an emotion, they were asked: “Would you feel happy, sad, angry or afraid?” This question was asked equally often for both groups (on 16% and 18% of trials in the low- and high-SCL groups respectively).

After identifying an emotion, the experimenter then asked participants to rate the intensity of this emotion by marking their responses on a drawing of



“Three big boys won’t let you pass...”

Figure 2. Example of an emotion-evoking situation.

a thermometer. Finally, children were asked to rate their familiarity with the situation, again by marking their responses on a drawing of a thermometer.

Short behavioural questionnaire for teachers. Additionally, teachers were asked to judge children’s reactions in five stressful social situations for the 52 selected children, to obtain an indication of children’s actual responses. They were asked to judge children’s behaviour on a scale from too assertive/aggressive (score 1) to too submissive/scared (score 4) in each situation. Thus, children could obtain a score from 5 to 20. An example of such a social situation is: “A boy pulls the child’s jumper so that it is stretched.”

| | | | | |
|-----------------------------|---------------------------------|-----------------------------------|-------------------------------------|------------------------------|
| | too assertive/ aggressive | assertive/ conflict solving | submissive/ conflict avoiding | too submissive/ scared |
| This child’s reaction is | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 1 | 2 | 3 | 4 |

RESULTS

The first hypothesis was that children with more self-reported somatic complaints would report more negative and less positive moods than the group who reported less somatic complaints. The mean scores on the four mood states for the two selected groups are shown in Table 1 and these findings confirm the hypothesis. It can be seen that the low-SCL group reported being happier than the group with frequent somatic complaints, whereas the latter group reported more negative moods, such as anger, sadness and fear. A 2 (Group: low versus high-SCL) \times 4 (Mood: happiness, anger, fear and sadness) analysis of variance with repeated measures on Mood, confirmed these main effects for Group, $F(1, 50) = 34.7$, $p \leq .001$, and Mood, $F(3, 150) = 109.69$, $p \leq .001$, and an interaction of Group \times Mood, $F(3, 150) = 28.63$, $p \leq .001$. Post hoc T-tests verified these noted differences per Mood scale for the two groups: $p \leq .001$ for Happiness, Sadness and Fear; $p \leq .003$ for Anger.

The second hypothesis in this study was that the high-SCL group would be less able to identify emotions in hypothetically presented emotion-evoking stories than the low-SCL group. Table 2 shows how often children in each group identified happiness, anger, sadness or fear for the 16 vignettes (Question 1). The data do not support the hypothesis. Few children were unable to identify an emotion on some occasions and this did not differ between the low- and high-SCL groups.

All 52 children identified happiness for the four stories that were designed to elicit this positive emotion. Moreover, neither the intensity of happiness (mean score = 8.1 on a scale from 0 to 10), nor the frequency of being in those kinds of situations (mean score = 5.0 on a scale from 0 to 10) differed for the two SCL groups. Therefore, the emotion happiness will not be analysed further.

A result that was not anticipated was that the low-SCL group reported more anger than the high-SCL group, whereas this pattern was reversed for fear. Sadness was not differentiated between the two groups. Overall, it can be seen that both groups identified anger more often than sadness or fear. A 2 (Group) \times 3 (Emotion) analysis of variance with repeated measures on

TABLE 1
Mean score on mood as a function of group

| | <i>Anger</i> | <i>Sadness</i> | <i>Fear</i> | <i>Happiness</i> |
|------------------|--------------|----------------|-------------|------------------|
| Low-SCL – group | 0.48 (.44) | 0.21 (.25) | 0.19 (.44) | 1.96 (.09) |
| High-SCL – group | 0.87 (.53) | 0.93 (.45) | 0.97 (.49) | 1.48 (.46) |

Standard deviation in parenthesis.

TABLE 2
Mean score on emotion identification as a function of Group \times Emotion

| | <i>"How would you feel?"</i> | | | | |
|------------------------------------|------------------------------|----------------|----------------|------------------|-------------------|
| | <i>Anger</i> | <i>Sadness</i> | <i>Fear</i> | <i>Happiness</i> | <i>No emotion</i> |
| Low-SCL group (<i>n</i> = 26) | 6.80 (2.48) | 3.08 (1.74) | 1.65 (1.52) | 4.00 (0.00) | .90 |
| High-SCL group (<i>n</i> = 26) | 5.00 (3.15) | 3.62 (3.03) | 2.85 (1.76) | 4.00 (0.00) | .90 |

Standard deviation in parenthesis. Total scores can exceed 16, because children could identify more than one emotion for a particular situation.

the last factor, confirmed a main effect for Emotion, $F(2, 100) = 18.68$, $p \leq .001$, and an interaction of Group \times Emotion, $F(2, 100) = 3.53$, $p \leq .033$. When tested post-hoc, t -tests confirmed the lower score for anger, $t = 2.30$, $df = 50$, $p \leq .013$, and the higher score for Fear, $t = 2.61$, $df = 50$, $p \leq .006$, of the high-SCL group compared with the low-SCL group.

Children's reported intensity of the emotions they identified (Question 2), showed a similar pattern (Table 3). Children reported that they perceived anger most intensely (mean score = 36.01 on a scale from 0 to 100); sadness less (mean score = 24.28) and fear least intensely (mean score = 19.09). A 2 (Group) \times 3 (Emotion) analysis of variance with repeated measures over the last factor confirmed a main effect for Emotion, $F(2, 100) = 18.68$, $p \leq .001$. An interaction of Group \times Emotion, $F(2, 100) = 3.53$, $p \leq .033$, showed that the high-SCL group reported a higher intensity for fear than the low-SCL group, $t = 2.62$, $df = 50$, $p \leq .011$. No significant differences were found for the other two negative emotions.

The frequency with which children thought they were confronted with this kind of negative emotion-evoking situations (Question 3), differed between the two groups (Table 4). The high-SCL group reported being in these kinds of negative situations more often than the low-SCL group (mean scores are 11.20 and 5.26 respectively). The order of emotions was the same for both groups—children recognized the anger-evoking situations most frequently, and the fearful situations least often. A 2 (Group) \times 3 (Emotion) analysis of variance with repeated measures on the last factor, confirmed main effects for Group, $F(1, 50) = 9.33$, $p \leq .004$, and Emotion, $F(2, 100) = 7.06$, $p \leq .001$. No significant interaction was shown.

Although the low-SCL group reported more angry reactions in social situations than the high-SCL group, this result was not confirmed by their teachers. Teachers judged that children from the high- and low-SCL group would react with the same degree of assertiveness (mean scores over five vignettes are 11.00 (standard deviation = 3.37) and 11.81 (standard

TABLE 3
Mean score on intensity as a function of Group \times Emotion

| | <i>"How angry/sad/scared/happy would you feel?"</i> | | | |
|------------------------------------|---|------------------|------------------|------------------|
| | <i>Anger</i> | <i>Sadness</i> | <i>Fear</i> | <i>Happiness</i> |
| Low-SCL group (<i>n</i> = 26) | 38.66 (17.61) | 22.84 (14.83) | 13.86 (14.32) | 79.92 (17.13) |
| High-SCL group (<i>n</i> = 26) | 33.94 (17.75) | 25.73 (15.70) | 24.32 (14.45) | 82.36 (13.58) |

Standard deviation in parenthesis.

TABLE 4
Mean score on frequency as a function of Group \times Emotion

| | <i>"How often were you in a similar situation?"</i> | | | |
|------------------------------------|---|-----------------|-----------------|------------------|
| | <i>Anger</i> | <i>Sadness</i> | <i>Fear</i> | <i>Happiness</i> |
| Low-SCL group (<i>n</i> = 26) | 8.18 (7.51) | 4.81 (6.80) | 2.78 (6.04) | 51.77 (23.18) |
| High-SCL group (<i>n</i> = 26) | 14.17 (12.68) | 10.53 (9.89) | 8.79 (10.71) | 48.35 (22.52) |

Standard deviation in parenthesis.

deviation = 3.82) respectively on a scale that ranged from 5 to 20). A *t*-test confirmed that teachers rated children from both groups equally assertive, $t = .16$, $df = 50$, $p \leq .87$.

DISCUSSION

The purpose of this study was to establish the relation between children's somatic complaints, experience of mood and identification of emotions. A self-report procedure yielded two groups of children who differed extremely in their frequency of somatic complaints. These groups differed substantially in their experience of negative moods and happiness. They also differed in their identification of the negative emotions that a set of vignettes would evoke but not in identifying happiness. After considering these results in relation to the alexithymia hypothesis we discuss them in relation to other views about the relation between emotion and somatic complaints.

The alexithymia hypothesis proposes that a common cause of somatic complaints is a failure to express and identify emotions. Although people with alexithymia can identify negative moods, they lack insight into why they experience them. This hypothesis suggests that a group with a high frequency of somatic complaints would report more negative moods and less positive moods but they would be less likely to identify either positive or

negative emotions provoked by common situations or would assess these as less intense than a group reporting no somatic complaints.

The results in this study concerning mood are consistent with the alexithymia hypothesis—children with a high frequency of somatic complaints did indeed report a greater frequency of negative moods and a lower frequency of happiness. However, the identification of emotions and rated intensity data did not fit the hypothesis. The groups showed no difference at all in their ability to identify the situations as eliciting emotions, nor did they differ in how intense they considered anger, sadness and happiness to be. Unexpectedly, however, the two groups differed in the content of the identified emotions. Children who reported more somatic complaints said they would react more often with fear and they reported an even stronger intensity of this emotion. The group who reported fewer somatic complaints, on the other hand, thought they would more often react angrily in the presented conflicting social situations. Both groups reported happiness and sadness equally often. Moreover, the more somatic group thought that they had experienced more social situations that evoked anger, sadness or fear than the less somatic group, although both groups reported an equal occurrence of happy occasions.

The failure of the emotion-evoking scenarios to differentiate between the groups may result either from a limitation in the alexithymia hypothesis or from the method of hypothetical scenarios being inappropriate. Although such scenarios are commonly used in research with young children to assess social and emotional development (Denham, 1998; Saarni, 1999), they may be inappropriate to test alexithymia as this primarily concerns a deficit in a person's identification of sensations as emotional in origin rather than an inability to judge how they might feel. Future research might also assess children's identification of emotions in situations where it was clear what emotions they were experiencing. Nevertheless, some results from the scenarios were unanticipated and showed interesting differences between the groups. These will now be considered.

One question that arises from these results is how the causal relationship between physical wellbeing and emotions is formed—do negative mood states and negative emotions cause physical complaints, or vice versa? Logically, frequent and severe somatic complaints will not be very conducive to a cheerful mood. Besides, a variety of bodily problems or pains can result in worrying about one's health and these children might be afraid that they have some kind of serious illness that has not been discovered by medical doctors (Wells, 1994). Moreover, recurrent somatic complaints have a debilitating impact on children's daily functioning in different ways. Such children usually have a higher non-attendance at school, and participate less in sports and other social activities (Palermo, 2000), which might constrain them in the development of their social skills.

Indeed, in the literature it can be found that low social competence and self-esteem are frequently noted in children with somatic complaints (Kronenberg, Laite, & Laclave, 1995; Rector & Roger, 1996; Raymer et al., 1984).

This might, in turn, have an effect on their emotion reactions in social situations with peers and explain their frequent fear and few anger reactions. The functional viewpoint on the different emotions holds that anger prepares the organism for attack (not necessarily in a physical way of course), whereas fear prepares for a flight reaction. Anger is a forward, confronting action tendency, aimed at conquering met resistance (Frijda, 1986). When anger is expressed in a socially acceptably way, it can be very effective in ending negative and unwanted situations in a satisfactory manner. An angry response shows that one is not willing to tolerate, for example, any kind of bullying behaviour. Yet, to enter into such confrontation requires a certain level of self-esteem and social competence, because an uncontrolled outburst of anger will loose its power and result in the opposite effect. In that case, a flight reaction might be more beneficial. Thus, children with low self-esteem might rather choose a flight response, which intends to avoid interpersonal problems instead of facing the situation and solving it, because they feel they lack the social skills to react otherwise.

Possibly, the many anger responses of the healthier group imply that this group consists of extremely assertive children, who become angry relatively easily. In other words, the healthier group might have externalizing behavioural problems, and react more aggressively towards others. However, their teachers' judgements concerning their behaviour with peers at school refutes this hypothesis, because the two groups did not differ in their degree of assertiveness, according to their teachers. Note that these teachers' judgements also argue against the explanation that the higher somatic complaint group might be less socially competent, which causes them to react in a more avoidant way. Further research into this seems required.

The causal relationship between emotions and somatic complaints could very well be the other way round. In that case, the question is how physical complaints can be explained by the noted differences in emotional reactions. One possibility is that fear presents a more diffuse physical reaction pattern than anger, which makes it more vulnerable to misinterpretations. However, empirical findings oppose this idea and demonstrate that preparations for either flight or fight bring about the same bodily changes, such as an increased heartbeat and blood supply to the muscles, widening of the bronchia and the pupils, and narrowing of the veins in the skin and the gastrointestinal system (Frijda, 1986). A few findings have shown differences between the experiencing of fear and anger. For example, more peaks in muscle tension are found with fear, while an increased diastolic blood

pressure is exhibited in anger (Ax, 1953; Schachter, 1957). Yet, in most research, the interpersonal correlations are low, whereas high intrapersonal correlations appear more often (Frijda, 1986). Possibly, different people have different specific physical reaction patterns. Knowledge about this phenomenon, however, is limited and needs further investigation.

Alternatively, the relationship that we found between somatic complaints and different emotional responses could be explained by the different course of anger and fear. Anger is an emotion that arises very rapidly. And, if the confronting action is successful, it vanishes almost equally as fast. A fearful reaction, on the other hand, tends to elicit avoidance, which does not solve the actual problem. Every new encounter (including imaginary ones) with this fearful cause, will renew this reaction pattern. So, in comparison to anger, fear, by its longer duration and tendency to be repetitive, is far more likely to induce a prolonged period of stress.

Yet, the data only partly fit this idea. Children were first asked how they would feel, that is they were asked to name the emotion they would feel most strongly. Here the higher somatic group reported more fear reactions. However, when asked how often they experienced those social conflicting situations, it appeared that the higher somatic group reported not only more fear-evoking social situations than their healthier peers, but also more anger- and sadness-evoking situations. Even though the teacher reports suggested that they handled social situations with their peers as well as the fewer-somatic-complaints group, a felt emotion does not necessarily coincide with emotional action. These children, therefore, might be less able to cope with their emotions internally. Teachers can judge children's overt behaviour, but not their mental coping strategies. So, what is really needed is an independent measure of the children's coping strategies, because these children might suppress their anger, sadness or fear. Suppressed anger or sadness has the same disadvantages as fear in terms of duration and repetition.

The negative effect of strong or long-lasting arousal is frequently discussed. Taylor (1999b; 1999c) states in the Dysregulation Hypothesis that poorly regulated emotional distress can disturb other biological subsystems, which brings about organic changes. Kellner (1991; 1994) argues that strong negative emotions cause changes in physiological activity. Others (Compas & Harding Thomsen, 1999; Chrousos et al., 1995) assume that acute as well as chronic stress set off increased arousal of the central nervous system, which in turn disrupts the gastroenterological system. As a consequence, this can result in loss of body weight, degeneration of the internal organs and negative effects on the auto immune system.

In conclusion, there are arguments to be made in both directions. Somatic complaints negatively affect one's mood. But negative emotions, when effective coping fails to diminish stress, can also result in somatic

complaints. First, further research should address the issue of whether children who report more somatic complaints indeed show so-called "anger-in" responses, as is sometimes suggested, due to a lack of skills used to express anger in a way that is socially accepted and beneficial to attaining their goals. Second, further research might focus on the hypothesis that the difference between children displaying either more or fewer somatic complaints is related to the extent to which children try to solve social conflicts or, instead, display avoidance behaviour. More information about children's coping styles in this respect seems necessary.

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